SEQUENCE LISTING

SEQ ID NO:1

    2C19 (internal deletion, and His tagged) coding sequence.

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ATGGCTAAGAAAACGAGCTCTAAAGGGCGGCCGCCTGGCCCCACTCCTCTCCCAGTGATTGGAAATATCCTACAGATAGA
TATTAAGGATGTCAGCAAATCCTTAACCAATCTCTCAAAAATCTATGGCCCTGTGTTCACTCTGTATTTTGGCCTGGAAC
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TTCCCACTGGCTGAAAGAGCTAACAGAGGATTTGGAATCGTTTTCAGCAATGGAAAGAGATGGAAGGAGATCCGGCGTTT.
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TGCTGAAGCACCCAGAGGTCACAGCTAAAGTCCAGGAAGAGATTGAACGTGTCGTTGGCAGAAACCGGAGCCCCTGCATG
CAGGACAGGGGCCACATGCCCTACACAGATGCTGTGGTGCACGAGGTCCAGAGATACATCGACCTCATCCCCACCAGCCT
GCCCCATGCAGTGACCTGTGACGTTAAATTCAGAAACTACCTCATTCCCAAGGGCACAACCATATTAACTTCCCTCACTT
CTGTGCTACATGACAACAAAGAATTTCCCAACCCAGAGATGTTTGACCCTCGTCACTTTCTGCATGAAGGTGGAAATTTT
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SEQ ID NO:2

    Protein sequence of 2C19 coded by SEQ ID NO:1

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LGCAPCNVICSIIFQKRFDYKDQQFLNLMEKLNENIRIVSTPWIQICNNFPTIIDYFPGTHNKLLKNLAFMESDI
LEKVKEHQESMDINNPRDFIDCFLIKMEKEKQNQQSEFTIENLVITAADLLGAGTETTSTTLRYALLLLLKHPEV
TAKVQEEIERVVGRNRSPCMQDRGHMPYTDAVVHEVQRYIDLIPTSLPHAVTCDVKFRNYLIPKGTTILTSLTSV
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TPVVNGFASVPPFYQLCFIPVHHHH
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SEQ ID No:3
2C19 wild type 1B.

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TCTGGAAGAGGCCATTTCCCACTGGCTGAAAGAGCTAACAGAGGATTTGGAATCGTTTTCAGCAATGGAAAGAGA
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CTGTTTTTATTCCTGACCTTCATTTTACAGAACTTTAACCTGAAATCTCTGATTGACCCAAAGGACCTTGACACA
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TGA

SEQ ID NO:4
Translation of SEQ ID NO:3

MAKKTSSKGRPPGPTPLPVIGNILQIDIKDVSKSLTNLSKIYGPVFTLYFGLERMVVLHGYEVVKEALIDLGEEF
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LGCAPCNVICSIIFQKRFDYKDQQFLNLMEKLNENIRIVSTPWIQICNNFPTIIDYFPGTHNKLLKNLAFMESDI
LEKVKEHQESMDINNPRDFIDCFLIKMEKEKQNQQSEFTIENLVITAADLLGAGTETTSTTLRYALLLLLKHPEV
TAKVQEEIERVVGRNRSPCMQDRGHMPYTDAVVHEVQRYIDLIPTSLPHAVTCDVKFRNYLIPKGTTILTSLTSV
LHDNKEFPNPEMFDPRHFLDEGGNFKKSNYFMPFSAGKRICVGEGLARMELFLFLTFILQNFNLKSLIDPKDLDT
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SEQ ID No:5
2D6 encoding nucleic acid

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TACGGACCGGCTTGGCGTGAACAGCGTCGTTTCTCTGTTTCTACCCTGCGTAACCTGGGTCTGGGTAAAAAATCT
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GACCCGCGTTTCCTGCGTCTGCTGGACCTGGCTCAGGAAGGTCTGAAAGAGGAGTCTGGTTTCCTGCGTGAAGTT
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GCTTTCCTGGCTGAAATGGAAAAAGCTAAAGGTAACCCGGAATCTTCTTTCAACGATGAAAATCTGCGTATCGTT
GTTGCTGACCTGTTCTCCGCGGGTATGGTTACCACCTCTACCACCCTGGCTTGGGGTCTGCTGCTGATGATCCTG
CACCCGGATGTACAGCGTCGTGTTCAGCAGGAAATCGACGACGTTATTGGCCAGGTTCGTCGGCCGGAAATGGGT
GACCAGGCTCACATGCCGTACACCACCGCTGTTATCCACGAAGTTCAGCGCTTCGGTGACATCGTTCCGCTGGGT
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CAGGGTCACTTCGTTAAACCGGAAGCTTTCCTGCCGTTCTCTGCTGGTCGTCGTGCTTGCCTGGGTGAACCGCTG
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GCTCACCACCACCACTGA

SEQ ID NO 6:
Translation of SEQ ID NO:5

MAKKTSSKGRPPGPLPLPGLGNLLHVDFQNTPYCFDQLRRRFGDVFSLQLAWTPVVVLNGLAAVREALVTHGEDT
ADRPPVPITQILGFGPRSQGVFLARYGPAWREQRRFSVSTLRNLGLGKKSLEQWVTEEAACLCAAFANHSGRPFR
PNGLLDKAVSNVIASLTCGRRFEYDDPRFLRLLDLAQEGLKEESGFLREVLNAVPVLLHIPALAGKVLRFQKAFL
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SEQ ID NO:7
3A4

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GGCTTTTATGATGGTCAACAGCCTGTGCTGGCTATCACAGATCCTGACATGATCAAAACAGTGCTAGTGAAAGAA
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GATGAAGAATGGAAGAGATTACGATCATTGCTGTCTCCAACCTTCACCAGTGGAAAACTCAAGGAGATGGTCCCT
ATCATTGCCCAGTATGGAGATGTGTTGGTGAGAAATCTGAGGCGGGGAAGCAGAGACAGGCAAGCCTGTCACCTTG

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AAAGACGTCTTTGGGGCCTACAGCATGGATGTGATCACTAGCACATCATTTGGAGTGAACATCGACTCTCTCAAC
AATCCACAAGACCCCTTTGTGGAAAACACCAAGAAGCTTTTAAGATTTGATTTTTTGGATCCATTCTTTCTCTCA
ATAACAGTCTTTCCATTCCTCATCCCAATTCTTGAAGTATTAAATATCTGTGTGTTTCCAAGAGAAGTTACAAAT
TTTTTAAGAAAATCTGTAAAAAGGATGAAAGAAAGTCGCCTCGAAGATACACAAAAGCACCGAGTGGATTTCCTT
CAGCTGATGATTGACTCTCAGAATTCAAAAGAAACTGAGTCCCACAAAGCTCTGTCCGATCTGGAGCTCGTGGCG
CAATCAATTATCTTTATTTTTGCTGGCTATGAAACCACGAGCAGTGTTCTCTCCTTCATTATGTATGAACTGGCC
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GATACTGTGCTACAGATGGAGTATCTTGACATGGTGGTGAATGAAACGCTCAGATTATTCCCAATTGCTATGAGA
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AGCTATGCTCTTCACCGTGACCCAAAGTACTGGACAGAGCCTGAGAAGTTCCTCCCTGAAAGATTCAGCAAGAAG
AACAAGGACAACATAGATCCTTACATATACACACCCTTTGGAAGTGGACCCAGAAACTGCATTGGCATGAGGTTT
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SEQ ID NO:8
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KDVFGAYSMDVITSTSFGVNIDSLNNPQDPFVENTKKLLRFDFLDPFFLSITVFPFLIPILEVLNICVFPREVTN
FLRKSVKRMKESRLEDTQKHRVDFLQLMIDSQNSKETESHKALSDLELVAQSIIFIFAGYETTSSVLSFIMYELA
THPDVQQKLQEEIDAVLPNKAPPTYDTVLQMEYLDMVVNETLRLFPIAMRLERVCKKDVEINGMFIPKGVVVMIP
SYALHRDPKYWTEPEKFLPERFSKKNKDNIDPYIYTPFGSGPRNCIGMRFALMNMKLALIRVLQNFSFKPCKETQ
IPLKLSLGGLLQPEKPVVLKVESRDGTVSGAHHHH
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SEQ ID NO:9
AKKTSSKGR

SEQ ID NO:10
MAKKTSSKGR

SEQ ID NO:11
MAYGTHSHGLFKK

SEQ ID NO:12
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SEQ ID NO:13
5'CTCCTCCACAAGGCAGCGGGCTTCCTCTTG3'

SEQ ID NO:14
5'CCCTCGTCACTTTCTGGATGAAGGTGGAAATTTTAAG3'

SEQ ID NO:15
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SEQ ID NOs:16-71:
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2D6ass5'2   GCTGCCAGGCCTGGGTAACCTGCTGCATGTGGACTTCCAGAACACCCGT
2D6ass5'3   ACTGCTTCGACCAGCTGCGTCGTCGTTTCGGTGACGTGTTCTCTCTGCAG
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2D6ass5'4     CTGGCTTGGACCCCGGTTGTTGTTCTGAACGGTCTGGCTGCTGTTCGCGA
2D6ass5'5     AGCTCTGGTTACCCACGGTGAAGACACCGCTGACCGTCCGCCGGTCCCGA
2D6ass5'6     TCACCCAGATCCTGGGTTTTGGTCCGCGTTCCCAAGGTGTTTTCCTGGCT
2D6ass5'7     CGTTACGGACCGGCTTGGCGTGAACAGCGTCGTTTCTCTGTTTCTACCCT
2D6ass5'8     GCGTAACCTGGGTCTGGGTAAAAAATCTCTGGAACAGTGGGTTACCGAAG
2D6ass5'9     AAGCTGCATGCCTGTGCGCTGCTTTCGCTAACCACTCTGGTCGTCCGTTC
2D6ass5'10    CGTCCGAACGGTCTGCTGGACAAAGCTGTTTCTAACGTTATCGCTTCTCT
2D6ass5'11    GACCTGCGGCCGCCGTTTCGAATACGACGACCCGCGTTTCCTGCGTCTGC
2D6ass5'12    TGGACCTGGCTCAGGAAGGTCTGAAAGAGGAGTCTGGTTTCCTGCGTGAA
2D6ass5'13    GTTCTGAACGCTGTTCCGGTTCTGCTGCACATCCCAGCTCTGGCTGGTAA
2D6ass5'14    AGTTCTGCGTTTCCAGAAAGCATTCCTGACCCAGCTGGACGAACTGCTGA
2D6ass5'15    CCGAACACCGTATGACCTGGGACCCGGCTCAGCCGCCACGTGACCTGACC
2D6ass5'16    GAAGCTTTCCTGGCTGAAATGGAAAAAGCTAAAGGTAACCCGGAATCTTC
2D6ass5'17    TTTCAACGATGAAAATCTGCGTATCGTTGTTGCTGACCTGTTCTCCGCGG
2D6ass5'18    GTATGGTTACCACCTCTACCACCCTGGCTTGGGGTCTGCTGCTGATGATC
2D6ass5'19    CTGCACCCGGATGTACAGCGTCGTGTTCAGCAGGAAATCGACGACGTTAT
2D6ass5'20    TGGCCAGGTTCGTCGGCCGGAAATGGGTGACCAGGCTCACATGCCGTACA
2D6ass5'21    CCACCGCTGTTATCCACGAAGTTCAGCGCTTCGGTGACATCGTTCCGCTG
2D6ass5'22    GGTATGACCCACATGACCTCTCGTGACATCGAAGTTCAGGGTTTCCGTAT
2D6ass5'23    CCCGAAAGGTACCACCCTGATCACCAACCTGTCTTCTGTTCTGAAAGACG
2D6ass5'24    AAGCTGTTTGGGAAAAACCGTTCCGTTTCCATCCGGAACACTTCCTGGAC
2D6ass5'25    GCTCAGGGTCACTTCGTTAAACCGGAAGCTTTCCTGCCGTTCTCTGCTGG
2D6ass5'26    TCGTCGTGCTTGCCTGGGTGAACCGCTGGCTCGTATGGAACTGTTCCTGT
2D6ass5'27    TCTTCACCTCTCTGCTGCAGCACTTCTCTTTCTCTGTTCCGACCGGTCAG
2D6ass5'28    CCGCGTCCGTCTCACCACGGTGTTTTCGCTTTCCTGGTTTCTCCGTCTCC
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2D6ass3'2     AAACACCGTGGTGAGACGGACGCGGCTGACCGGTCGGAACAGAGAAAGAG
2D6ass3'3     AAGTGCTGCAGCAGAGAGGTGAAGAACAGGAACAGTTCCATACGAGCCAG
2D6ass3'4     CGGTTCACCCAGGCAAGCACGACGACCAGCAGAGAACGGCAGGAAAGCTT
2D6ass3'5     CCGGTTTAACGAAGTGACCCTGAGCGTCCAGGAAGTGTTCCGGATGGAAA
2D6ass3'6     CGGAACGGTTTTTCCCAAACAGCTTCGTCTTTCAGAACAGAAGACAGGTT
2D6ass3'7     GGTGATCAGGGTGGTACCTTTCGGGATACGGAAACCCTGAACTTCGATGT
2D6ass3'8     CACGAGAGGTCATGTGGGTCATACCCAGCGGAACGATGTCACCGAAGCGC
2D6ass3'9     TGAACTTCGTGGATAACAGCGGTGGTGTACGGCATGTGAGCCTGGTCACC
2D6ass3'10    CATTTCCGGCCGACGAACCTGGCCAATAACGTCGTCGATTTCCTGCTGAA
2D6ass3'11    CACGACGCTGTACATCCGGGTGCAGGATCATCAGCAGCAGACCCCAAGCC
2D6ass3'12    AGGGTGGTÁGAGGTGGTAACCATACCCGCGGAGAACAGGTCAGCAACAAC
2D6ass3'13    GATACGCAGATTTTCATCGTTGAAAGAAGATTCCGGGTTACCTTTAGCTT
2D6ass3'14    TTTCCATTTCAGCCAGGAAAGCTTCGGTCAGGTCACGTGGCGGCTGAGCC
2D6ass3'15    GGGTCCCAGGTCATACGGTGTTCGGTCAGCAGTTCGTCCAGCTGGGTCAG
2D6ass3'16    GAATGCTTTCTGGAAACGCAGAACTTTACCAGCCAGAGCTGGGATGTGCA
2D6ass3'17    GCAGAACCGGAACAGCGTTCAGAACTTCACGCAGGAAACCAGACTCCTCT
2D6ass3'18    TTCAGACCTTCCTGAGCCAGGTCCAGCAGACGCAGGAAACGCGGGTCGTC
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2D6ass3'20    CTTTGTCCAGCAGACCGTTCGGACGGAACGGACGACCAGAGTGGTTAGCG
2D6ass3'21    AAAGCAGCGCACAGGCATGCAGCTTCTTCGGTAACCCACTGTTCCAGAGA
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2D6ass3'23    GTTCACGCCAAGCCGGTCCGTAACGAGCCAGGAAAACACCTTGGGAACGC
2D6ass3'24    GGACCAAAACCCAGGATCTGGGTGATCGGGACCGGCGGACGGTCAGCGGT
2D6ass3'25    GTCTTCACCGTGGGTAACCAGAGCTTCGCGAACAGCAGCCAGACCGTTCA
2D6ass3'26    GAACAACAACCGGGGTCCAAGCCAGCTGCAGAGAGAACACGTCACCGAAA
2D6ass3'27    CGACGACGCAGCTGGTCGAAGCAGTACGGGGTGTTCTGGAAGTCCACATG
2D6ass3'28    CAGCAGGTTACCCAGGCCTGGCAGCGGCAGCGGACCCGGCGGTCGGCCTT
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SEQ ID NO:72
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SEQ ID NO:73
CAGAGATTTTTTACCCAGACCCAGGTTAC

SEQ ID NO:74
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SEQ ID NO:75
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SEQ ID NO:76
5'-TTAACATATGGCATATGGTACTCATTCACATGGTCTGTTTAAAAAACT
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SEQ ID NO:77
2C9-FGloop

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LGCAPCNVICSIIFHKRFDYKDQQFLNLMEKLNENIKILSSPWIQVYNNFPALLDYFPGTHNKLLKNVAFMKSYI
LEKVKEHQESMDMNNPQDFIDCFLMKMEKEKHNQPSEFTIESLENTAVDLFGAGTETTSTTLRYALLLLLKHPEV
TAKVQEEIERVIGRNRSPCMQDRSHMPYTDAVVHEVQRYIDLLPTSLPHAVTCDIKFRNYLIPKGTTILISLTSV
LHDNKEFPNPEMFDPHHFLDEGGNFKKSKYFMPFSAGKRICVGEALAGMELFLFLTSILQNFNLKSLVDPKNLDT
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SEQ ID NO:78
2C9-P220 V60C

MAKKTSSKGRPPGPTPLPVIGNILQIGIKDISKSLTNLSKCYGPVFTLYFGLKPIVVLHGYEAVKEALIDLGEEF
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LGCAPCNVICSIIFHKRFDYKDQQFLNLMEKLNENIKILSSPWIQICNNFPTIIDYFPGTHNKLLKNVAFMKSYI
LEKVKEHQESMDMNNPQDFIDCFLMKMEKEKHNQPSEFTIESLENTAVDLFGAGTETTSTTLRYALLLLLKHPEV
TAKVQEEIERVIGRNRSPCMQDRSHMPYTDAVVHEVQRYIDLLPTSLPHAVTCDIKFRNYLIPKGTTILISLTSV
LHDNKEFPNPEMFDPHHFLDEGGNFKKSKYFMPFSAGKRICVGEALAGMELFLFLTSILQNFNLKSLVDPKNLDT
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SEQ ID NO:79
2C9-P220

MAKKTSSKGRPPGPTPLPVIGNILQIGIKDISKSLTNLSKVYGPVFTLYFGLKPIVVLHGYEAVKEALIDLGEEF
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LGCAPCNVICSIIFHKRFDYKDQQFLNLMEKLNENIKILSSPWIQICNNFPTIIDYFPGTHNKLLKNVAFMKSYI
LEKVKEHQESMDMNNPQDFIDCFLMKMEKEKHNQPSEFTIESLENTAVDLFGAGTETTSTTLRYALLLLLKHPEV
TAKVQEEIERVIGRNRSPCMQDRSHMPYTDAVVHEVQRYIDLLPTSLPHAVTCDIKFRNYLIPKGTTILISLTSV
LHDNKEFPNPEMFDPHHFLDEGGNFKKSKYFMPFSAGKRICVGEALAGMELFLFLTSILQNFNLKSLVDPKNLDT
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SEQ ID NO:80
2C9-FG Loop-K206E

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SIEDRVQEEARCLVEELRKTKASPCDPTFILGCAPCNVICSIIFHKRFDYKDQQFLNLME
KLNENIEILSSPWIQVYNNFPALLDYFPGTHNKLLKNVAFMKSYILEKVKEHQESMDMNN

PQDFIDCFLMKMEKEKHNQPSEFTIESLENTAVDLFGAGTETTSTTLRYALLLLLKHPEV
TAKVQEEIERVIGRNRSPCMQDRSHMPYTDAVVHEVQRYIDLLPTSLPHAVTCDIKFRNY
LIPKGTTILISLTSVLHDNKEFPNPEMFDPHHFLDEGGNFKKSKYFMPFSAGKRICVGEA
LAGMELFLFLTSILQNFNLKSLVDPKNLDTTPVVNGFASVPPFYQLCFIPVHHHH

SEQ ID NO:81
2C9 wild type P450

MDSLVVLVLCLSCLLLLSLWRQSSGRGKLPPGPTPLPVIGNILQIGIKDISKSLTNLSKVYGPVFTLYFGLKPIV
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FPGTHNKLLKNVAFMKSYILEKVKEHQESMDMNNPQDFIDCFLMKMEKEKHNQPSEFTIESLENTAVDLFGAGTE
TTSTTLRYALLLLLKHPEVTAKVQEEIERVIGRNRSPCMQDRSHMPYTDAVVHEVQRYIDLLPTSLPHAVTCDIK
FRNYLIPKGTTILISLTSVLHDNKEFPNPEMFDPHHFLDEGGNFKKSKYFMPFSAGKRICVGEALAGMELFLFLT
SILQNFNLKSLVDPKNLDTTPVVNGFASVPPFYQLCFIPVHHHH